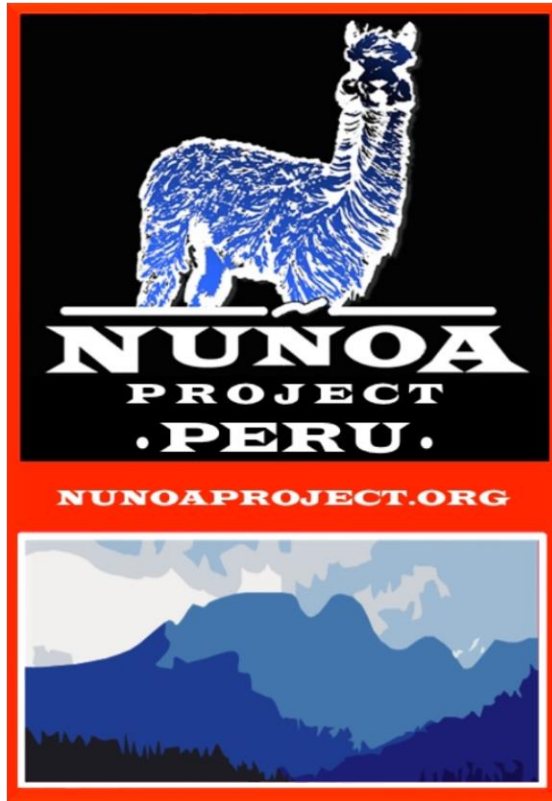


Alpaca Herd Health Management



Providing education and support for farmers, veterinarians, and students in the US and Peru

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North American Camelid Studies Program

Learning Objectives

To describe the behavior and techniques for proper handling of camelids.

To describe housing for camelids in the northeastern US.

To describe basic procedures and health management of camelids.



Basic Camelid Behavior

a prey species

physical contact is limited to
nursing, breeding, and fighting.

spit when fighting over food or
territory.

Spiting occurs at varying
degrees of severity depending
on the animal and the situation
and *must be provoked.*



Camelids are very attentive mothers.

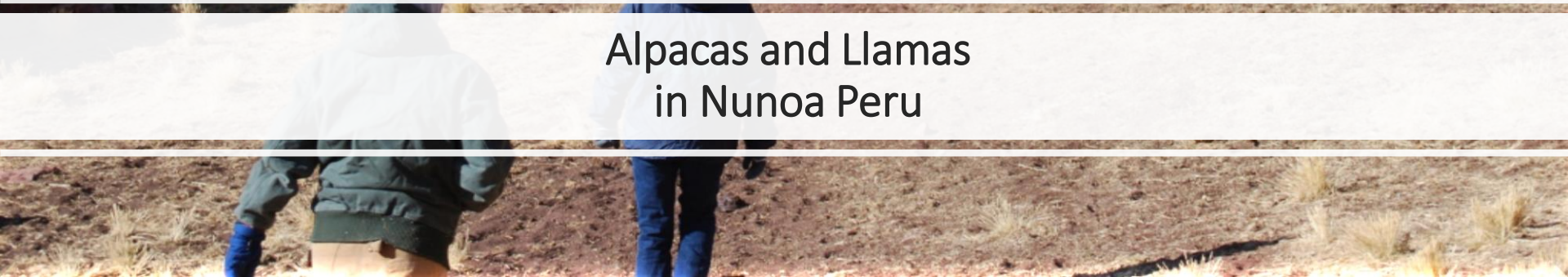
Pregnant females can be very “*tempermental*”.

Males fight for dominance *in the presence of females*.

Males can be housed together but will fight when one returns to the group from breeding or behavior testing.



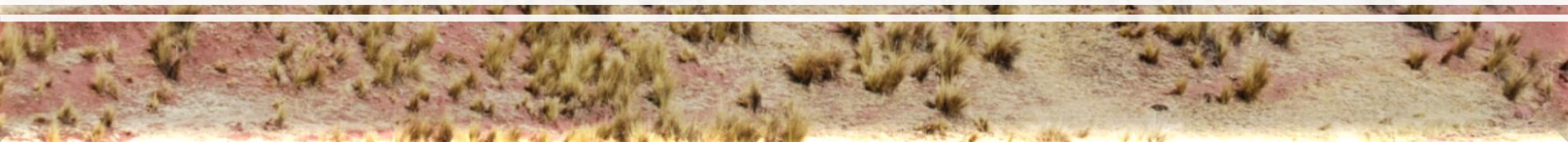
Alpacas and Llamas
in Nunoa Peru







What is different from the US?



Ears Down Signals Concern



Handling Alpacas & Llamas

Avoid making eye contact: camelids interpret it as a threat gesture.

Alpacas are typically hand held for routine procedures- injections, foot trimming.

Chutes are a great way to restrain camelids for reproduction exams and dental procedures

Camelids will travel together. If you get one to move, others will follow.





Food bribes

naturally move away from you if you walk behind them.

A stretched rope or sticks/wands in each hand expands your size and also makes them move away or change direction.

Camelids are strong and very quick = use *finesse not force*.

All handling requires quiet and respectful behavior.

Physical & Chemical Restraint

It isn't possible to overpower adult llamas or large alpacas *so don't even try!*

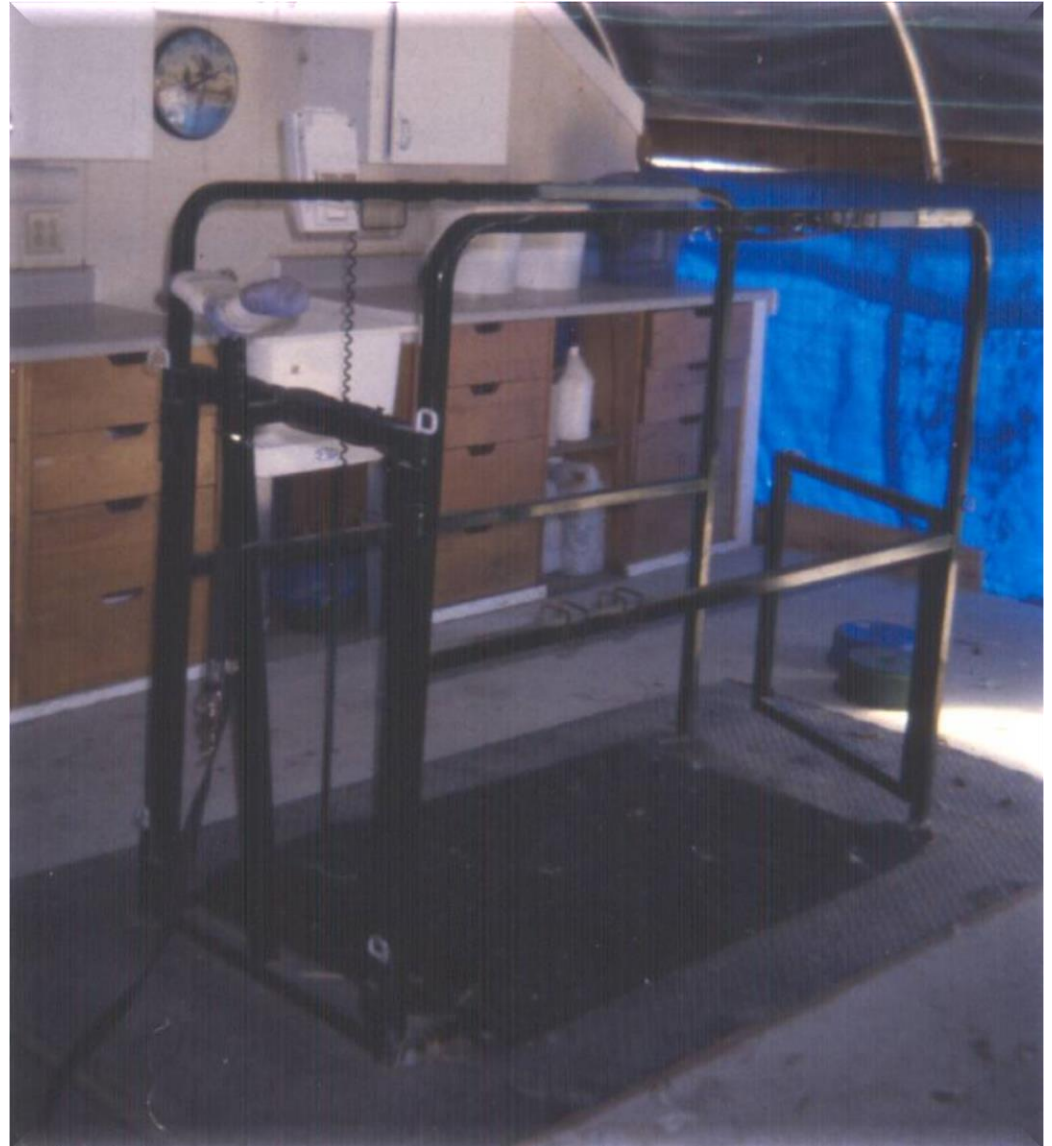
It is best to *use as little physical restraint as possible.*

More restraint = more stress >> more struggling!

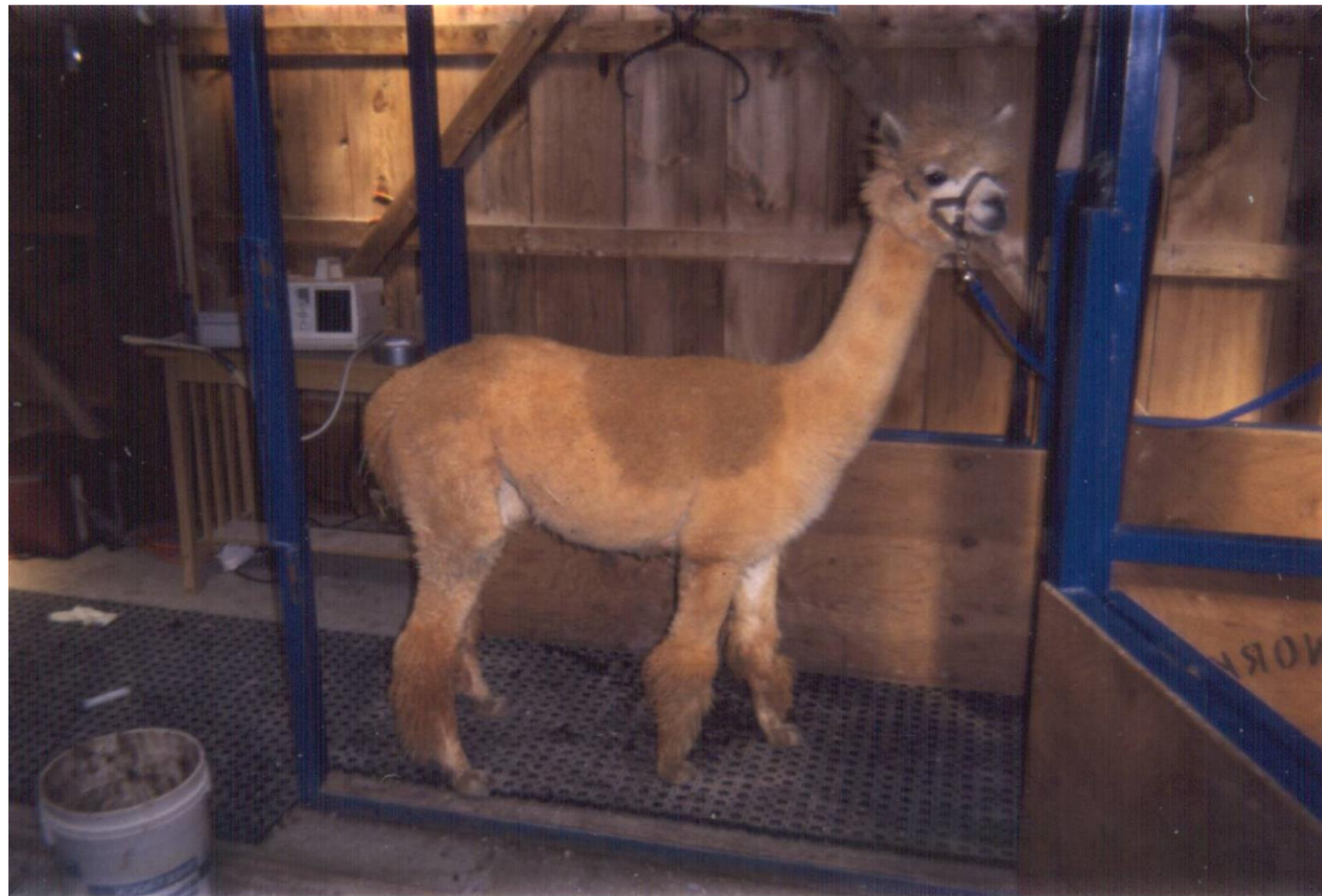
A halter, lead rope, flat wall, and chute are also useful in physical restraint.

Injectable chemical restraint is safe and effective in alpacas

Portable Restraint Chute



Fixed Location Chute



Housing

Many different types of shelters are adequate for alpacas

It is important to plan for snow removal and water runoff when designing barns, paddocks, and pastures.

Frost free hydrants and heated water buckets make life much easier in winter.

Greenhouse Barn in Winter



Greenhouse Barn in Summer



Three Sided Shed in Paddock



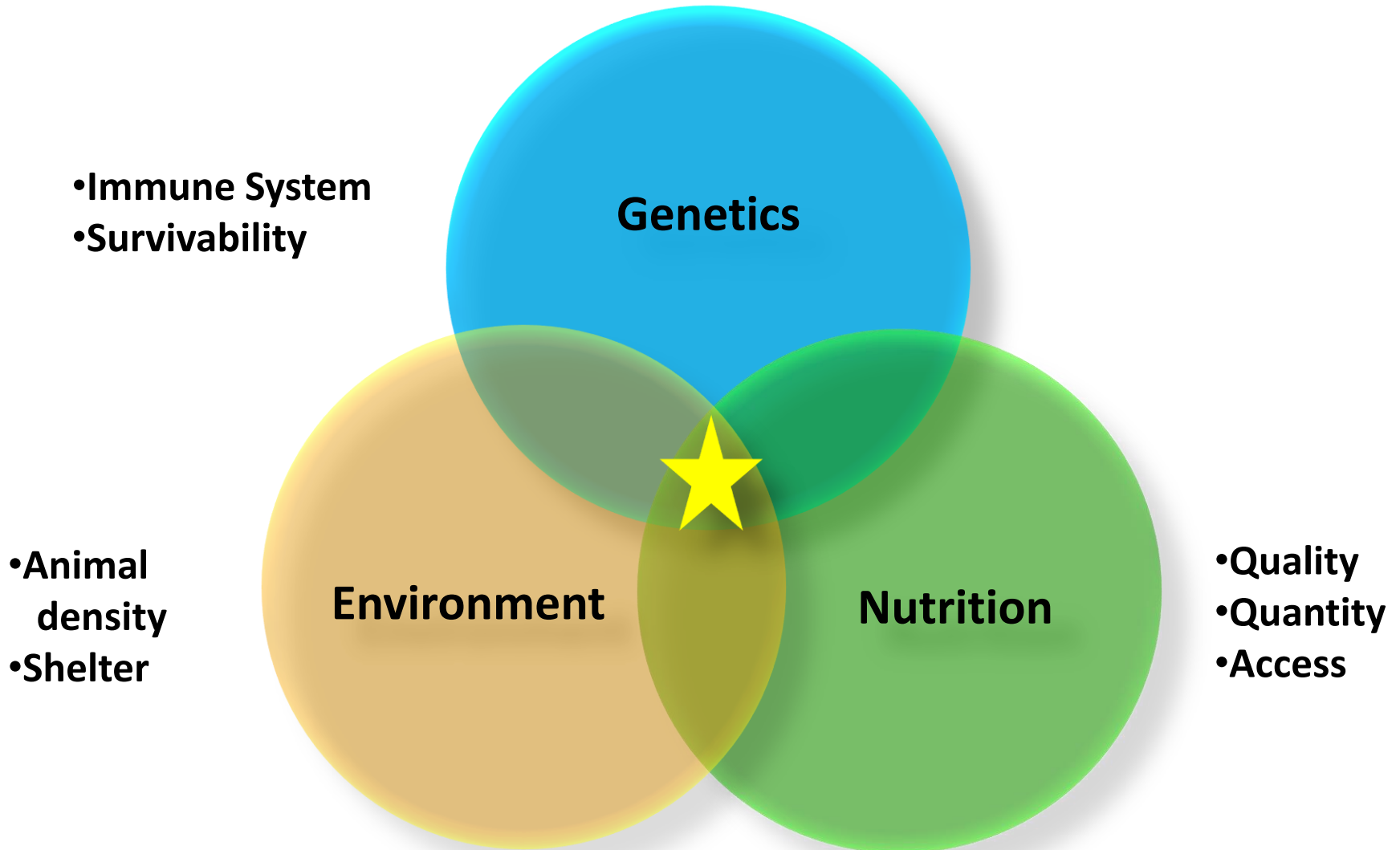
Central Barn with Radiating Paddocks



The background features a white central area with a dark grey triangle in the top-left and a yellow triangle in the bottom-right, both separated from the white area by a thin white diagonal line. The text "Alpaca Health Management" is centered in the white area.

Alpaca Health Management

Animal Health



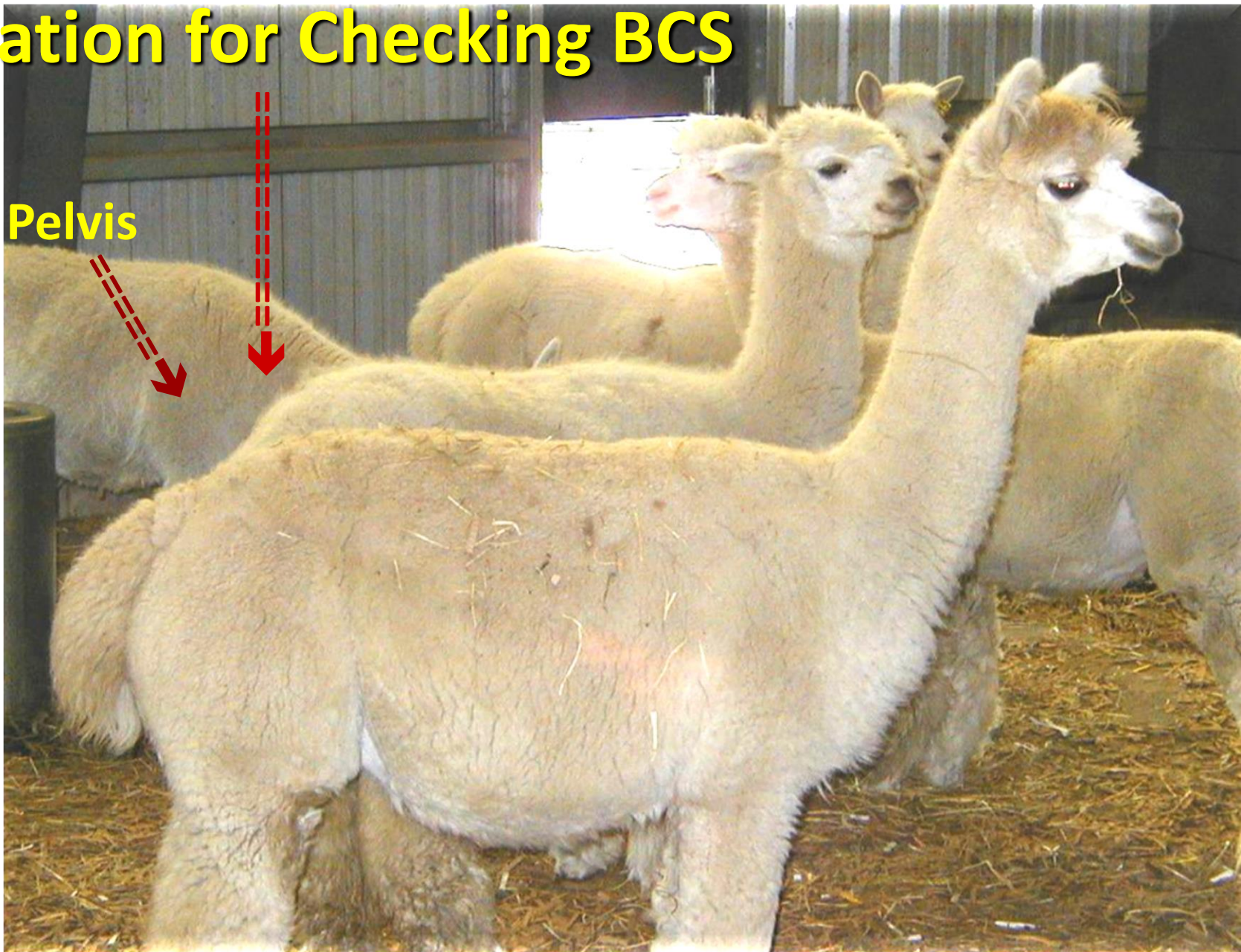
Body Condition Score

- Look at the dorsal spinal muscles in the lower back
 - Camelids with healthy a body weight will have a slightly round shape.
 - A triangular shape means the animal is too thin.
 - A flat top line means that the animal is overweight.
 - Overweight animals may also have fat behind their elbow over the thorax, and/or at the brisket and perineum.

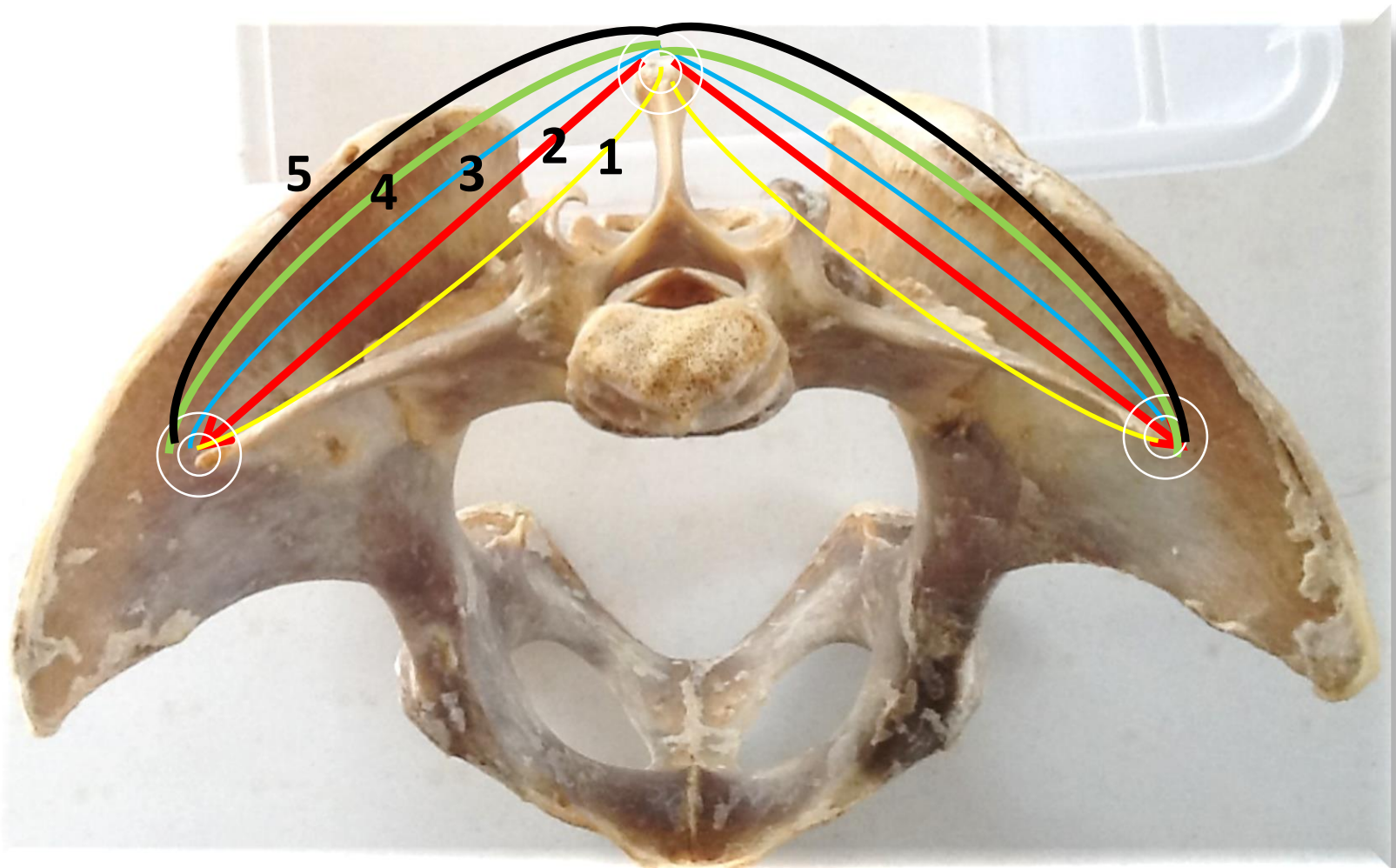
-
- The number one management error owners make is ***not checking body condition score- this may result in animal deaths!!!!!!***
 - ***This occurs most often from overcrowding!***

Location for Checking BCS

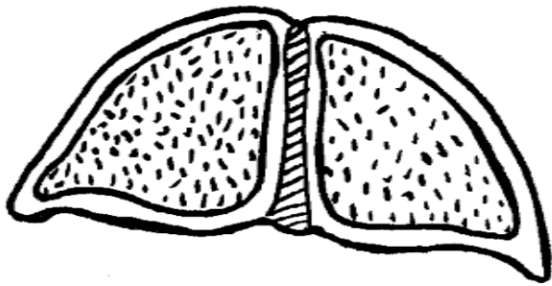
Pelvis



Body Condition Score

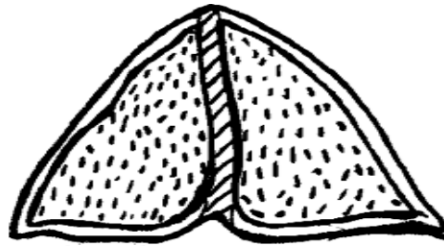


Cross Section Through Lower Back Musculature for Body Condition Scoring



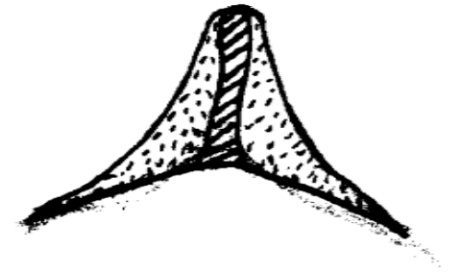
Too fat

5



Just right

3



Too thin

1

Small
alpaca
herd in
August

25 geldings normally shorn in
May

delayed multiple times because
of rain

**5 animals died out of 25 over 4
weeks since early July**

Why??

- Poisoning?
- Infectious disease?
- Mineral deficiency?
- Malnutrition?

Farm Visit in August

6 out of 21 had a BCS of 2 out of 5

15 out of 21 had a BCS of 1

What was the problem?

- **Not enough calories!!**
- Cold winter
- Not enough shelter from the cold
- Low quality hay was fed

How could it have been avoided?

- Touch the animals frequently=
BCS checks!!

Correction
of the
Problem

Feed more calories!!

Free choice good quality hay-
more feeders

Free choice grain- will not hurt
alpacas and llamas

Clean, fresh water

Loose minerals

Smaller feeding groups

More shelter buildings

Monitor BCS frequently

Common Procedures

Trimming feet

Injections

Foot Care

Camelid feet have a soft pad and a nail at the end.

Very similar to dog feet (avoid cutting nails too short!)

nail should be cut even with the bottom of the pad.

Overgrown nails should not be trimmed this much at one time to avoid bleeding.

Bleeding feet??







Trimming feet in
Peru

Injection Techniques



Subcutaneous = subQ / SQ Injections



- Most medications and vaccines
- Tent up the skin by pulling gently on the fiber in front of the shoulder blade below the place where the back of the neck joins the body
- Insert the needle quickly through the tented area parallel to the surface of the body and pull back on the plunger to ensure that a vacuum is drawn in the syringe before injecting.
- Massage area after injection.

Intramuscular = IM injections

- Sedatives and anesthetics should be given in the upper, caudal, medial thigh.
- 20 gauge, 1.5 inch needles are best.



Intravenous = IV injections

- Jugular vein in the mid to upper cervical region.
- Palpate the jugular groove after locating the large ventral processes of the cervical vertebrae.
- 20 gage needle
- Puncture above the thumb nail with the thumb against the transverse cervical vertebral process.



Disease Prevention

Vaccinations

- Stimulate the immune system to get it primed for reacting effectively to invaders
- **Rabies**- yearly
- **CDT = *Clostridium perfringens***
Types C and D-, and
Clostridium tetani- yearly
- **Leptospirosis**- twice yearly
- **Pre-birthing boosters with all 3** for females 1-2 months before parturition

Good nutrition is essential to a good immune system

Good Management Practices

Management Practice	Prevents
Avoid overcrowding	Malnutrition and infectious diseases
Form small groups based on temperament, body size, and body condition score	Malnutrition and injuries
Keep pastures, barns, and water sources clean	Spread of infectious diseases including Gastrointestinal Parasites
Keep animals away from ponds, streams, swamps, and muddy areas	Exposure to Meningeal Worm Disease infections

GI Parasite Control

Minimize contamination with infective larvae and eggs to prevent clinical disease

Avoid overcrowding!

Parasites are a part of animals and cannot be totally eliminated

A low level of parasitism keeps the immune system stimulated

Young animals \leq 2 years old are most susceptible to infection

Adult animals which are consistently affected by parasites should not be used as breeding animals

Fecal examinations frequently to assess the effectiveness of the control program, especially in times of greatest parasite shedding

Management, not medicine, is the key to control

Parasites should be managed to avoid clinical disease through a combination of practices including:

- feces removal
- pasture rotation
- interspecies grazing
- lastly use of medication.

20% of the animals in a group harbor 70 to 80% of the parasites

- Identify that group
- treat them only if absolutely necessary
- keep them away from the rest of the herd

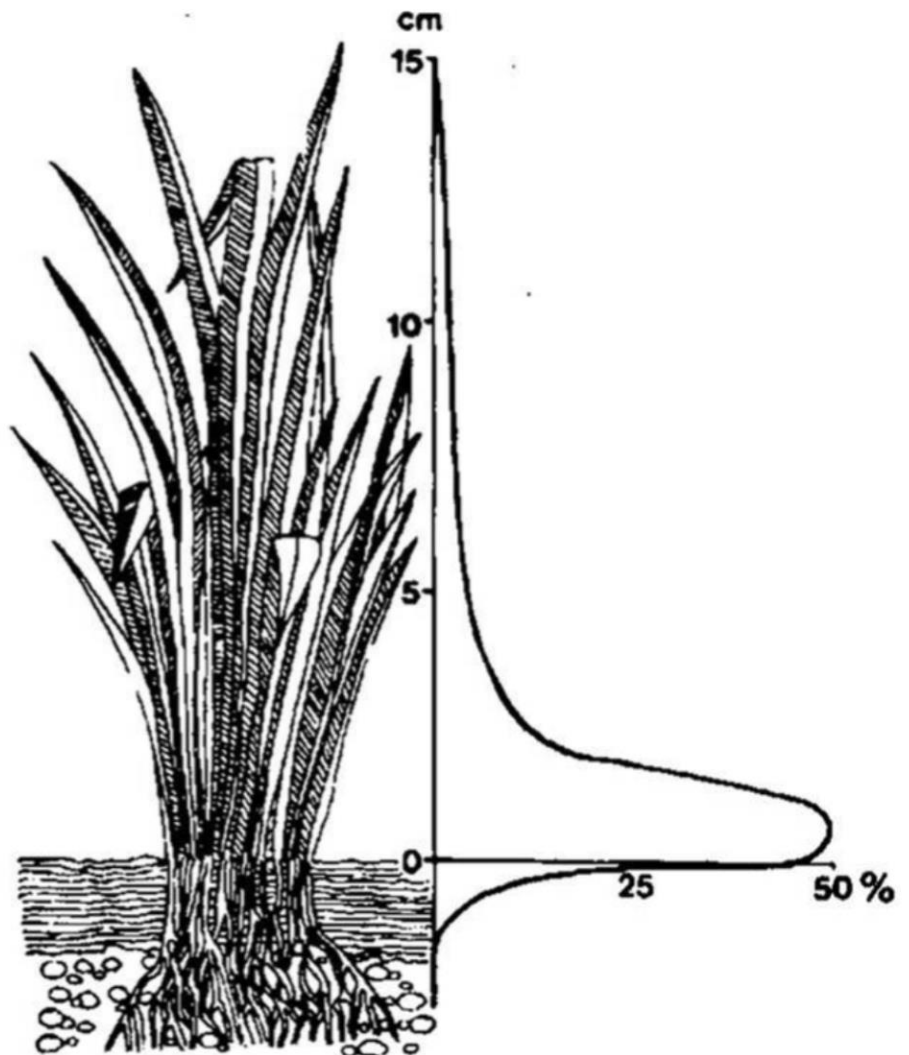
Who should be tested?

- Individual sampling of all **suspect animals**:
 - those with poor body condition
 - poor growth rates
 - or those with diarrhea or loose stools.
- A **herd screening test** should include approximately 25% of the animals in each group.

Strongyles

- the most common gastrointestinal parasites of camelids and small ruminants on most farms.
- eggs are passed in the feces
- under the right conditions of temperature and moisture >> larvae.
- larvae >> infective L3 stage, which are found primarily in the first 2 inches of the plants on pasture.

Location of Infective Larvae



Strongyle infective L3 stage in a water droplet on a blade of grass.



Meningeal Worm Disease

The meningeal worm -
Parelaphostrongylus tenuis

Definitive host:
White tailed deer carry and pass it in the feces through the.....

intermediate host slug or snail.

Aberrant hosts: camelids, red deer, sheep, moose, other wild ungulates- causes damage to the spinal cord and/or brain during its migration



This may result in paralysis or death of the infected animal.

The first sign seen usually a hind leg weakness or lameness.

- This would not be a normal sign in such an agile animal.

Other aberrant hosts: sheep and goats- not commonly affected



Infection of Camelids

Slugs and snails- found primarily in **wet areas** or under dead leaves, branches, and trees.

They are infected by the L1 while moving over deer dung piles.

The camelid is infected by consuming vegetation contaminated by the gastropod slime trail containing the infective **L3 which are very resistant to environmental factors.**

The larval form of the parasite migrates from the stomach to the spinal cord or possibly other areas of the body.

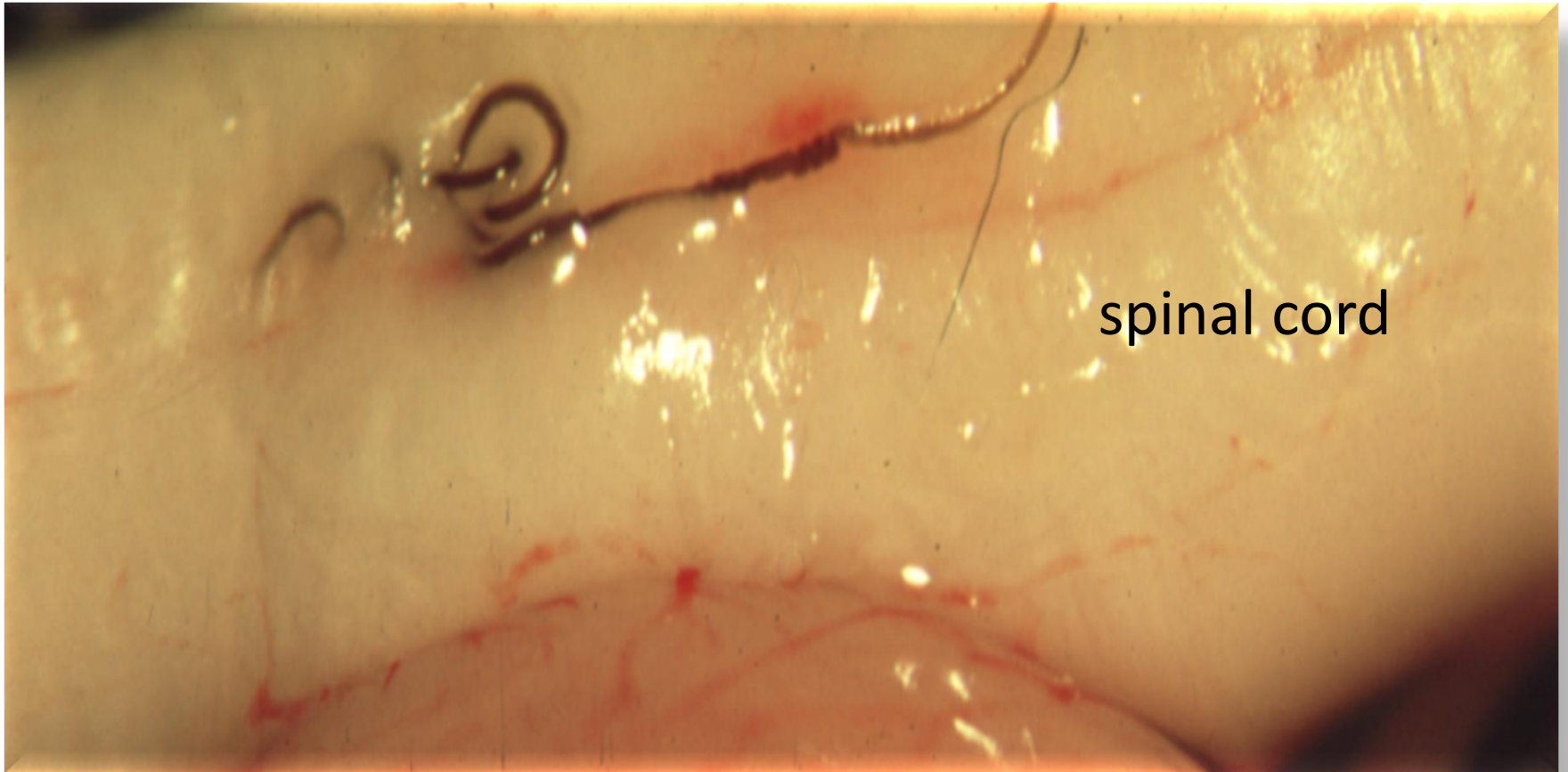
The actual pathway taken by the worm

- determines the portion of the brain and spinal cord that is damaged and
- severity of the neurologic signs observed.

Warm weather in early winter and thaws and the accompanying lack of snow cover >>

- animals browse among dead leaves
- can become infected by consuming the L3.

P. tenuis L3 in an Alpaca Spinal Cord



Clinical Signs of MWD in Camelids

Any neurologic signs in a camelid should make you think about meningeal worm disease.

lameness, incoordination, weakness, inability to get up, circling or drifting gait, head tilt, depression, or blindness.

Initial clinical signs may vary between a mild "lameness" to acute paralysis and blindness.

The signs are often asymmetric.

Diagnostic Testing and Treatment

CSF tap >>elevated levels of eosinophilic white blood cells in the spinal fluid

Early aggressive treatment with anti-inflammatory and anti-parasitic drugs is effective.

Treated animals are often left with neurologic deficits and some must be euthanized.



Survival

Prevention

In my opinion, the only proven prevention program against this disease is still the administration of injectable ivermectin monthly during snail and slug season

April to December/January in the northeastern US.

Use of MWD Prevention Drugs

Effective in preventing MWD, but

has resulted in emergence of **drug resistant intestinal parasites**, plus

Environmental contamination

- Passed through camelid in active form in feces
- May kill beneficial soil arthropods

The best we have at the present time

Composted manure from camelids is good habitat for earth worms.

Other MWD prevention methods

Animals should be fenced away from swampy areas, streams, and ponds to limit their exposure to snails and slugs.

Deer proof fences and gravel paths around camelid enclosures to limit exposure to the parasite.

A rigorous prevention program is effective at preventing the disease.



MWD Vaccine?

- Help stop emergence of drug resistant intestinal parasites where preventative is frequently used
- Avoid environmental contamination
- **Not under development-cost**